LOUISIANA
Conservationist

LOUISIANA WILD LIFE AND FISHERIES COMMISSION

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Conservation Pledge

I give my pledge as an American to save and faithfully to defend from waste the natural resources of my country—its soil and minerals, its forests, waters and wildlife

Published Bi-Monthly in the interest of conservation of Louisiana's natural resources by the Wild Life and Fisheries Commission, 400 Royal Street, New Orleans, Louisiana, 70130.

Waterfowling in Louisiana is a popular sport for an estimated 90,000 duck and goose hunters. Louisiana winters approximately 20 per cent of the continental waterfowl population. Its lush marshes are home for millions of ducks, geese and coots. Shooting hours this year are from one half hour before sunrise to sunset. This is a typical scene in a Louisiana marsh just at sunrise. It's the sort of picture that sets the pulses of waterfowlers tingling with anticipation. (Cover photo by Joe Herring.)

LOUISIANA Conservationist

LOUISIANA WILD LIFE AND FISHERIES COMMISSION

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EDITORIAL

GAME MANAGEMENT originated in Asia and Europe where the earliest step was the restriction of game kill. In the United States the first game laws were enacted over 150 years ago. They set forth the seasons in which game could lawfully be taken and the methods by which it could be harvested. Since that time game law enforcement has been a necessary step in management and it is now more important than at any time.

LESLIE L. GLASGOW
Director

Law enforcement is a basic and essential step in game management. It is the foundation on which management is built. Unless this foundation is solid, little can be built upon it. Without it, only meager gains can be made from the more technical management practices.

Why is law enforcement so essential to our wildlife program? It is necessary to protect the resources we have and those that we will develop. Although significant gains have been made in educating the public, education has not progressed to the point where we can curtail enforcement. Eventually we hope to reach this goal.

Some parishes have many acres of excellent deer habitat yet very few deer are present. Why? Probably because of lax enforcement or too many free ranging dogs or both. A few hunters should not be allowed to kill mottled ducks during the special teal season for these violations may well be the reason for discontinuing this fine hunt. Alligator poachers and hide buyers should not be permitted to drive the alligator to extinction for their own personal gain.

A basic American concept is that game belongs to the people and that the State is the administrator for non-migratory species. Anytime a poacher takes game illegally he is stealing valuable public property. He spends very little to carry out his stealing. On the other hand a legal hunter is willing to spend at least one hundred dollars to bag a deer. Therefore the poacher hurts the economy of the area from which he is stealing.

Enforcement is a big factor in assuring a more even distribution of the kill among hunters. A few hunters kill eight (8) or ten (10) deer per season. Enforcement keeps this practice to a minimum and gives other hunters an opportunity to kill a deer. Game bag limits for other species are enforced for the same reason.

In programs such as turkey transplanting, rigid law enforcement is necessary for establishment of birds in areas from which they have been eliminated. The success of reintroduced or newly introduced species may depend on good enforcement. We have many acres of habitat that are suitable for turkeys which will be stocked as quickly as we can obtain them. The game law violator must not be allowed to kill this seed stock.

Law enforcement is the basis of considerable revenue for the Commission through the sale of hunting and fishing licenses. Without enforcement, how many licenses would be purchased? Quite a few but there isn't any doubt that sales are greater because of enforcement. In addition to direct revenue from the sale of licenses, federal aid funds for fish and game work are prorated to the states on the basis of the number of licenses sold plus other factors.

Activities such as development, research and education are also important in our wildlife program. There may be a day when law enforcement can take a back seat, but that day has not yet arrived. Because of its importance, game law enforcement is being stepped up at all levels.

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NEW METHODS

AQUATIC WEED CONTROL IN LOUISIANA

Virgil T. Lapham

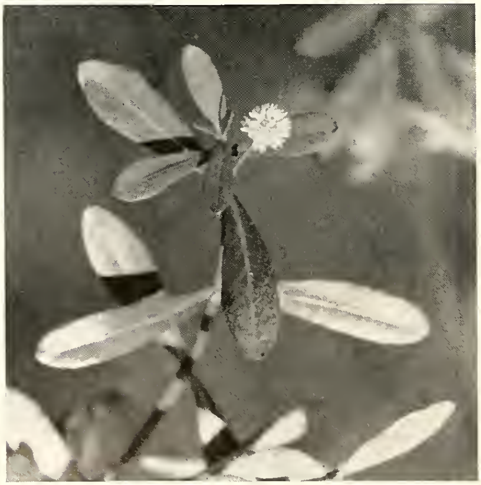
Photographs by the Author

THE DEVELOPMENT of a better mousetrap is said to cause the world to beat a path to the builder's door. The same statement evidently holds true when one gives out information about new developments in the methods used to control aquatic weeds. Evidence that there is a strong interest in the subject has been well demonstrated by the large number of letters, telephone calls, and personal visits which the Commission has been receiving ever since the article titled "Why Throw Away Your Farm Pond Dollars" was published.

In response to your many requests, more detailed information about the new methods and materials has been compiled, and is offered here in an effort to answer some of the questions. Almost all of those who contacted the writer wished to know the answer to one or more of three questions: "What plants do I have?", "What shall I use, and how?", and "When is the Commission going to do something?" It was interesting to note that very few asked about the cost.

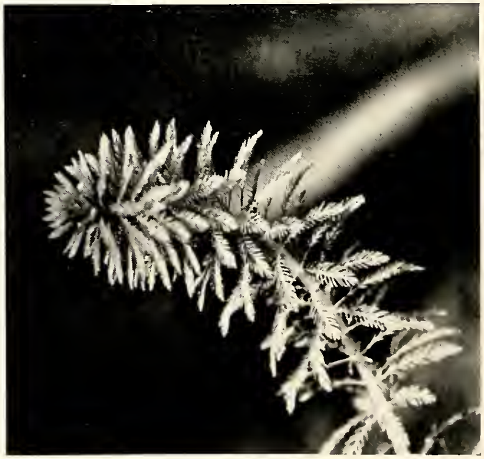
The Wildlife and Fisheries Commission is vitally concerned about cost. Their activities are governed by cost because all of their programs must be accomplished within the framework of the funds available to them. It is true that the control of aquatic vegetation in Louisiana's public waters is one of the Commission's many responsibilities but remember, they have only your tax dollars to use in paying for such a program. None of the chemicals used to control aquatic weeds can be considered to be "cheap". Even the highly necessary hyacinth control program has been made possible only by constant attention to economy and efficiency, yet this program involves treating only the surface of the water. The cost of a state-wide program, using these new materials to control the underwater weeds, would involve the spending of millions of dollars each year just to purchase the necessary materials. Funds of this size are not available. In addition, it must be remembered that none of these chemicals will permanently solve the problem. Retreatment every two or three years would probably be necessary. For these reasons, the Commission cannot use these chemicals to treat the vast areas of public waters in the State. Indeed, it would be very difficult to justify such a statewide program operated at the public expense anytime in the near future.

(Continued on page 19)



ALLIGATORWEED *(Alternanthera philoxeroides)*

The clover-like blossom and opposite leaves readily identify this serious plant pest. Very difficult to control. If it appears on your pond, spray immediately with 2, 4-D, silvex, or Tordon. Do not permit it to spread.



PARROTFEATHER *(Myriophyllum brasiliense)*

Its soft green feathery appearance is very attractive but can be a real nuisance in shallow areas. Notice the "fish skeleton" shape of the leaves. Similar leaf structure will identify the other members of this genus.

Fur Resources On The Increase

By Ted O'Neal

Digging out western Louisiana muskrat stock for a rehabilitation program in the hurricane "Betsy" effected areas of St. Bernard and Plaquemines Parishes.

IN SPITE OF the estimated losses of 400,000 Nutrias, 70,000 Muskrats and other furbearers, as a result of hurricane "Betsy" the dollar value of the State's 1965-66 FUR TAKE surpassed the 1964-65 thirteen year high by $1,372,734. The $5,470,731 value of the past season's production of pelts and meat products derived from wild furbearers, is nearing what is considered normal for the State's fur catch. Past records indicate that the six to eight million dollar value annually was normal for Louisiana, the exception being $15,553,185 recorded for the 1945-46 season when 8,337,411 Muskrats, 244,502 Raccoon, and 168,598 Minks were trapped. That year all of the better three-cornered grass marsh along our Coast was completely "eaten-out" and destroyed by this tremendous Muskrat population.

Similar, or what is considered good Muskrat habitat conditions have not returned extensively along the Gulf Coast marshes, however, factors other than a great Muskrat "eat-out" have adversely altered the marshes, since that time.

Industrialization coupled with the normal marsh erosion and subsidence, severe storms and prolonged summer dry cycles, plus the entry of our unpresidented Nutria population.

During this prolonged period of poor Muskrat production a series of unusually severe winters occurred which have also proved to be of no particular asset to the normal ecological process conducive to producing Muskrats or their habitat. The complete loss of the state's citrus industry is proof of the unusual low temperature conditions that prevailed.

Our records show that prolonged wet cycles accompanied by mild temperatures were prevalent at the time of the state's peak fur production.

For the past ten to twelve months, Louisiana has experienced weather conditions that we think is greatly contributory toward normal or better marsh habitat and Muskrat reproduction. At present, marsh conditions are greatly improved all along the Gulf Coast.

The 1965-66 Muskrat catch showed a 61% increase over the previous year. This catch was made somewhat accidental as a by-product of the Nutria trapping. About the only conspicuous thing about our past season's Muskrat trapping was the fact that rat trapping was seldom mentioned among trappers or buyers, even though our Nutria take was over 300,000 short, only Nutria was discussed. Certainly an outside observer would not have considered Louisiana the "number one" Muskrat producing State in the nation. In retrospect, from studying present Nutria market prices, we are aware that the enthusiasm shown during the past season's collecting induced trappers and buyers into going a little "overboard" price wise. The lack of attentiveness in grading the accompanying Muskrats tended to shove this item a little out of line also. However, both items have a good market value and it is thought that the coming season's production will find a suitable outlet.

	Season					
	1965-1966	1964-1965	Increase	Decrease	% Increase	% Decrease
Muskrat	324,204	201,510	122,694		60.9%	
Nutria	1,257,385	1,568,233		310,848		19.8%
Opossum	7,137	7,047	90		1.3%	
Raccoon	78,348	68,627	9,721		14.2%	
Mink	28,216	23,311	4,905		21.1%	
Otter	3,588	3,288	300		9.1%	
Fox	264	145	119		82.1%	
Lynx	13	31		18		58.1%
Skunk	161	296		135		45.6%
Beaver	14	57		43		75.4%

Getting The Most Out Of

LOUISIANA DEER HUNTING

McFadden Duffy

IN RECENT YEARS, the popularity of deer hunting in Louisiana has increased by leaps and bounds. An article by John L. Haygood in the last issue of the Louisiana Conservationist revealed that during last year's deer season some 82,505 hunters purchased big game hunting licenses which are good for deer and turkey. Add those 28,587 overage and underage permits issued and you come up with a grand total of 111,092 big game hunters.

It's a safe bet that there are not more than 2,000 wild turkey hunters in the state so that leaves you with well over 100,000 deer hunters and those big game permits were obtained for deer hunting.

Many who are new to the sport want to know where they can hunt, what sort of equipment they need, what to do with a deer after it's been bagged; and most of all, they want to know how they can be successful with deer hunting.

WHERE TO HUNT

The question of where to hunt is perhaps the hardest to answer but is generally the first question raised. Results of the 1965-66 deer hunting season by parishes shows that Tensas and Morehouse Parishes led the field with 3,759 deer bagged in Tensas Parish and 3,210 deer bagged in Morehouse Parish. The next three leading parishes in the order of known deer bagged were Concordia, Union and East Carroll, where hunters took in excess of 1,000 deer in each of those three Parishes.

As a further illustration of the growing importance of deer hunting, Haygood pointed out that during the 1960-61 season—the first year of the Big Game License—the State sold 56,462 Big Game Licenses and had a reported kill of 5,525. Not including the underage and overage permits, last year's 82,505 Big Game License holders reflected a 46 percent increase in hunters and a 366 percent increase in the deer kill.

This makes the problem of having a place to hunt even more important, particularly in view of the fact that the Louisiana Wild Life and Fisheries Commission lost Chicago Mills Game Management Area on August 1. Part of it will be placed in agriculture and the bulk of it has been leased to private hunting clubs. Deer will be taken by club members but the regretable part of losing approximately 110,000 acres of the finest deer hunting hardwoods in the state means that the general public will not harvest any of those deer.

A decade and a half ago virtually all the deer in the State were in Madison, Tensas and Concordia Parishes and in the deep swamps of the Atchafalaya and Maurepas areas. The Commission's restocking program over a period of 15 years means deer hunting can be found in all parishes except Acadia.

Part of the State's 16,000,000 acres of com-

At night after a day's hunting, many tales are spun around the camp fire. Some are true and some are on the tall side but there is companionship among deer hunters, making a good sport even better. The Louisiana Wild Life and Fisheries Commission is increasing its plans for more camping sites on the Game Management Areas.

mercial timber is posted, but a great deal of it is open. Also, there are managed areas which are open to deer hunters. These are managed primarily for deer. The best guide as to where public hunting can be had is the brochure or digest of hunting and fishing regulations. It gives dates for hunting, regulations regarding any-sex deer, and boundaries. It's the hunters' Bible of where to go.

RIGHT EQUIPMENT

The basic item of equipment is the gun. Both shotgun and rifle are important in the taking of Louisiana deer. It depends upon where you are hunting and whom you are hunting with to answer that question precisely.

Hunting with deer hounds is allowed in many areas of the State and most hunters in groups using dogs prefer the shotgun. That is because they spread out and form a barricade. With hunters stationed about a 100 or 150 yards apart, those groups will not allow rifles. Only exception is when there is a bayou forming part of the "L" shaped barricade. Hunters stationed along a bayou often use rifles while those in the woods use shotguns with buck shot.

There is a prevailing rumor that rifles are not allowed in deer hunting. Nothing could be farther from the truth. In fact, there is a trend toward use of rifles and hunters will argue until the end of time about the merits of one rifle against another. It's a matter of record that the 30.30 lever-action carbine has killed more American deer than any other rifle.

On the other hand, it simply will not cut the mustard on shots at deer in open fields. At more than 100 yards, the 30-30 will cripple and lose more deer than it will bag. This open field shooting calls for a carefully scoped rifle and precision accuracy. Hunters will swear by various types and calibers, from automatics to bolt action rifles and even slide-action guns of caliber 30.06.

The choice must be an individual one and will vary in different parts of the State, depending entirely upon the individual's personal preference. In a nutshell, any rifle can be called a deer rifle provided its limitations are clearly known by the user.

Because of the acute hearing deer possess, clothing should be soft and naturally sufficiently warm for the time of year and prevailing weather. Hunters on a stand should wear adequate clothing because there is a big difference in remaining motionless and moving about.

The color of the clothing used is not an important factor. When a hunter is standing motionless or seated at the base of a tree, he can be wearing flaming scarlet. It appears that deer are colorblind. Movement and sound have spooked more deer than any brilliant color of clothing. Color is important and serves to distinguish a hunter from fellow hunters. One thing to make certain is that your handkerchief is not white. A white handkerchief being used by a hunter might be mistaken for a flashing deer tail. The latter is important in terrain that is densely populated with hunters.

There is probably no greater satisfaction than bagging a fine buck with a good set of antlers. A head mount provides pleasure for years and serves as a reminder that the hunter who bagged the buck has one day that will never be forgotten.

As for boots, they should be as comfortable and noiseless as possible. Soft leather, treated with neat's-food oil, is ideal. The oil will help keep out water which may be crossed in low spots.

Waterproof matches, a good compass and a sharp skinning knife with carbonundum to keep it sharp are also necessary. And, always, a length of strong nylon rope about 12 feet long, for hanging your deer, for dragging it, or for fashioning a litter to cart it out.

FROM KILL TO TROPHY

The first thing a hunter should decide when he shoots a deer is whether he wants the head mounted. If he does, there is a definite technique in the skinning out process. Imagine a "V" cut on the BACK of the head. Then from the "V" a straight cut down the BACK of the head.

Then starting at a point on top of the shoulders, slit the skin down over each shoulder until the two slits meet at the point of the chest between the forelegs. From these cuts peel the skin off the shoulders and neck right up to the skull. Use the point of your knife to deeply cut into the cartilages between the skull and the first vertebra, cutting as well as you can. Then twist the head forcefully from one side to the other until the skull breaks free from the backbone. This leaves you with the head and attached cape.

Then turn the skin inside out over the head. This calls for some delicate knife work. First cut very closely around each antler. Then cut down to the orifice of each ear, leaving the ears on the skin of course. Skin and cut around. Then skin and cut around the eyes, using your finger in each eye to make certain that you are not cutting the eyelashes, then to the junction of the upper gums close to the teeth, then in front of the front teeth or gums, leaving the nose on the skin.

Next salt the ears, eyes, nose and gums very thoroughly. Roll the scalp up, flesh side to flesh side and give it several days for the salt to work in. Later, remove as much salt as possible and hang it up to dry. Do not stretch it. Then remove as much flesh from outside and inside the skull as possible. Send the dry skull with antlers attached and lower jaw, along with the skin to a good taxidermist. You'll have a mount to be proud of.

It sounds complicated, but take your time and it's worth every effort. Be certain to use a sharp skinning knife and keep sharpening it with the stone.

FOR REAL VENISON

There's a big difference in real venison and just plain deer meat. Much of the flavor depends upon how the deer is handled after it is bagged. Immediate dressing, thorough cooling, and proper AGING are the keys to tender venison as compared with unpalatable, gamey meat.

In field dressing, turn the deer on its back and prop it in that position. Cut out the genitals free down to the anus. Then slit open the abdomen from breastbone to pelvic arch, being careful not to puncture the paunch or intestines. Cut around the anus to free the intestines from the inner wall of the pelvic and draw them into the abdominal cavity.

Turn your deer over on one side and cut the diaphragm from the ridge cage. Pull down the heart and lungs and roll out all internal organs. Cooling can be hastened by skinning, but few hunters skin their deer. If it's a camp hunt, hang the deer in a cool spot, splitting the chest cavity and pelvic arch. Prop it open with sticks. Several days aging will produce real venison.

In some cases, particularly in camp hunts or at clubs; the deer is skinned promptly and the deer butchered and divided. The worst mistake any deer hunter can make is to freeze his share the day it was killed. Much of the flavor will be destroyed and the meat will be tougher than that of venison properly aged.

Hunters returning from a trip the same day and carrying a deer on the front hood or over the fender of a car are asking for trouble on a long trip. Heat from the engine won't do the venison any good. They may want to show folks along the highway that they scored. Actually, they are not doing the meat any good and the blood will be almost impossible to remove.

Proper care of deer to insure tender and favorable venison calls for immediate field dressing and cooling. On camp hunts, after this has been accomplished, deer should be hung and carefully protected against flies and other insects. Cheese cloth comes in handy and should be included in the gear taken along for a camp hunt.

Check stations, maintained on Game Management Areas, are a valuable tool in deer management. Compilations made after the deer season on these controlled areas give an accurate report of the number of hunters using an area, the total bag, the condition of the deer and information on growth and nutrition.

Upon reaching home, get some butcher to store the deer in his cooler. Perhaps he will skin it for you, knowing that he'll be paid for the butchering and packaging. The main thing is to see that it is properly dressed and hung to chill and age.

DEER SAVVY

Anyone who has followed the progress being made by the Louisiana Wild Life and Fisheries Commission during the last 15 years in restocking operations, expanding deer herds, and providing more hunting opportunity can rest assured that Louisiana is fast becoming a deer hunting state.

You can tell a newcomer to this fine sport where he can hunt, what equipment is best for the type of terrain he plans to hunt, how to field dress his deer and thus obtain the maximum in quality venison; but you can't assure him a deer.

That is simply because deer hunting calls for deer savvy and some of it you can learn from reading but the rest of it has to be learned in the field. In fact, the most important part is learned in the field, and a great deal can be learned from talking with hunters who are consistent in filling out with a deer or possibly two each season.

Getting to know the habits of the animal you're seeking is all a part of the game. It teaches you to spot likely places if you're still hunting.

Luck plays an important role in hunter success. There are many young hunters, under 16 years, who bag fine deer and there are many seasoned hunters who go for years without bagging a deer.

But deer hunters have a good thing going for them. The Louisiana Wild Life and Fisheries Commission is steadily working to improve hunter success of all who go after Louisiana whitetail deer. ✠

SHRIMP CULTURE IN PONDS

J. G. Broom

THERE has been a growing interest in commercial culture of saltwater shrimp in ponds for the past several years. Throughout the Gulf States, both industry and service agencies have begun to see the need and desirability of pond culture. Because shrimp fishing is seasonable, pond stocks held for a favorable market would both increase the supply and help stabilize the market price. Louisiana, which has thousands of acres of marsh unsuited for most types of crop cultivation, should be ideally suited for brackish water culture of shrimp.

Shrimp farming has become an accepted practice in several foreign countries but as yet is not economically feasible in the United States because of several unsolved problems. Possibly the biggest problem facing the shrimp grower is obtaining enough small shrimp to stock. Several investigators, outside Louisiana, are now studying the spawning of the adult shrimp as well as the rearing of the larval stages. Among other principles that must be established are the following: (1) the number of shrimp to stock, (2) the amount and kind of fertilizer or feed, (3) the expected yield, and, (4) the species of shrimp best suited to pond cultivation. Parameters of the population that should be studied will include the rate of growth and mortality as well as the optimum temperature, salinity and water quality. All of these unknowns must be explored and tested so that a prospective shrimp grower can be assured of a reasonable return before investing in this type of culture.

Some preliminary pond cultivation studies were carried out at the Louisiana Wild Life and Fisheries Commission's Marine Laboratory located on Grand Terre Island, south of New Orleans. A 1/4-acre experimental pond was built for these studies and experiments; these were conducted for two years without introducing fertilizers or any other specific foods. Water levels were maintained to compensate for evaporation. Results indicate that:

The 1/200-acre concrete block tanks are located under the laboratory building on Grand Terre Island. During an experiment they are sampled each week with a small mesh seine.

During the experimental period, samples of the live shrimp are removed from the pond, weighed, and returned to the pond. The weight difference from each sample establishes the growth rate.

1. Production will vary from 75 to 200 pounds per acre.
2. The white shrimp is better suited for pond culture than the brown shrimp.
3. A fast rate of growth occurs and more than one crop per year would be possible.
4. Mortality rates are not extremely high.

Also constructed were four 1/200-acre concrete block tanks and these were used for feeding experiments. The results from feeding indicate that:

1. Many more shrimp can be grown when given a supplemental feed.
2. Each of the selected test foods used, a commercial fish food and ground fresh fish, can produce higher rates of growth than shrimp having natural food only.
3. Mortalities are lower when supplemental feeds are used.

Six more 1/4-acre ponds are presently being rehabilitated at the Grand Terre Laboratory after being damaged by Hurricane "Betsy" in September 1965. These are planned for use in the spring of 1967. Experiments will include basic shrimp production, fertilization and feeding.

In the future, shrimp farming may become another important industry in Louisiana. If successful methods and techniques are developed, it is possible that shrimp, crabs and other commercially important saltwater animals could be produced at rates of over one-thousand pounds per acre. This could supplement the existing production of many acres of marsh land by additional productive and profitable uses. ✻

PASS-A-LOUTRE PUBLIC SHOOTING AREA

Ted Joanen

ESTABLISHED BY the Louisiana Legislature in 1921 the Pass-a-Loutre Public Shooting Area has provided waterfowl hunting opportunity since that time. Pass-a-Loutre is a 66,000 acre tract of delta marshland in the south eastern part of the State, and lies 15 miles southeast of Venice, the closest automobile access point.

Since 1954 the Louisiana Wild Life and Fisheries Commission has conducted a Public Waterfowl Hunting Program on Pass-a-Loutre and has provided boat transportation from Venice to the hunting grounds. Again this year the Commission announces the program will be made available to the public.

Crippled by Hurricane Betsy in September, 1965, the Louisiana Wild Life and Fisheries Commission operated six out of nine public camps during the 1965-66 waterfowl season, but yet played host to almost 500 waterfowl hunters. The average daily duck kill per hunter (2.36) was slightly higher for the 1965-66 season as compared to 2.16 for the 1964-65 waterfowl season.

The marshes of the lower delta appear to be in excellent condition at this time despite the tremendous storm tides experienced as a result of the hurricane of last year. Because of its unique location the high river stage last spring flooded the lower delta, and created ideal conditions for the production of desirable waterfowl food plants, such as delta duck potato, and fresh-water three square.

Two-day hunts will be conducted again this year on Tuesday-Wednesday, and Saturday-Sunday of each week thus providing a rest period between hunts so that the ducks will have an opportunity to resume their normal activities. This has proven to be very desirable in past years in holding large numbers of waterfowl on Pass-a-Loutre throughout the season.

Each Pass-a-Loutre camp is capable of accommodating up to 8 men with utensils, beds, decoys, boats, and butane provided by the Commission. The use of these camps is restricted to duck hunters who make application to the Commission and are selected by drawings.

The three public camps destroyed by the hurricane have been rebuilt and will be ready for service this waterfowl season. Also six of the original camps were renovated as needed. The system of ditches behind each camp which provided very beneficial access to hunters during periods of low tides was expanded.

The schedule for the drawing for each hunt during the season is as follows:

Application Period	*Drawing*	*Hunting Dates*
Oct. 31-Nov. 7	Nov. 10	Nov. 19 & 20; 22 & 23
Nov. 7-Nov. 14	Nov. 17	Nov. 26 & 27; 29 & 30
Nov. 14-Nov. 21	Nov. 23	Dec. 3 & 4; 6 & 7
Nov. 21-Nov. 28	Dec. 1	Dec. 10 & 11; 13 & 14
Nov. 28-Dec. 5	Dec. 8	Dec. 17 & 18; 20 & 21
Dec. 5-Dec. 12	Dec. 15	Dec. 27 & 28; Dec. 31 & Jan. 1

Letters must be postmarked between the dates specified in the application period for applicable hunts and received prior to the drawing.

The rules governing the public shooting ground program are as follows:

1. The area will be open to hunters through applications: preference in drawing will be given to resident hunters, although any spaces unfilled by resident hunters will be made available to nonresident hunters for the standard set fee.
2. After drawing and up to one week prior to the hunt, any space unfilled may be had by applying to the New Orleans office.
3. Transportation from Venice to the hunting ground and return will be furnished.
4. Beds, cooking utensils, fuel, stove, drinking water, and lights will be furnished, but *no linens, fishing equipment, guns, shells,* or *food*—bring your own.
5. One duck boat, paddles, pushpoles and decoys will be furnished for every two hunters.
6. Camps will be assigned by the supervisor in charge.
7. Duck, goose, and coot shooting only will be permitted. Waterfowl retrievers are the only dogs allowed.
8. All hunting or shooting on the Pass-a-Loutre area is limited to morning hours and must stop by 12:00 noon. Violation of this provision will result in the immediate expulsion from the area and denial of the privilege of returning to the area in the future.
9. Applicants may apply for the hunts throughout the season but not more than one application per hunt.
10. A fee of $5.00 will be charged each hunter selected for the trip. The full amount must accompany each application. Reimbursement of the full fee will be made if the hunter is not selected.
11. All hunters will be required to sign an agreement releasing the Commission from the responsibility for any bodily harm or personal loss and agreeing to pay for any Commission property lost or destroyed.
12. Permits may be transferred from one person to another upon endorsement. No refund will be made for permits which have been issued.
13. Hunting is restricted to men 16 years or older; anyone under 18 years of age must be accompanied by his father or guardian.
14. No alcoholic beverages will be allowed on the boat or the camp.
15. Valid Louisiana hunting license or overage permits and waterfowl stamp will be required.
16. No boats, motors or rifles are permitted on the area.

17. Simple camp rules must be observed.

HOW TO APPLY

1. Make application direct to Ted Joanen, Louisiana Wild Life and Fisheries Commission, 400 Royal Street, New Orleans, Louisiana 70130.

2. You may apply in a group not exceeding eight (8) persons, naming each person in the application. Full remittance of fee at $5.00 per hunter must accompany the application. Send personal check or money order—*no cash.* Reimbursement in full will be made within three days after the drawing if the hunter or group is not selected.

3. Submit only one application per hunter; if the name of any person is received in more than one application for the same hunt, it will be disqualified.

4. Application for the hunts must be made in advance through the mails and postmarked during the application dates according to the schedule in order to be considered for the drawing.

5. Specify the dates desired, and indicate whether or not the other hunt during the week of your request will be acceptable if your preferred dates are filled.

6. The quota for each hunt will be selected by public drawing in the Refuge Division office, between 10 A.M. and 12 noon, on the designated dates. Decisions of supervisory personnel are final.

7. Permits and specific instructions will be mailed to selected hunters within three days after the drawings.

Free Permit Hunting Area

In addition to the section of Pass-a-Loutre reserved for the public camps, 30,000 acres of the area will be open again this year to those who wish to make a hunt using their personal equipment and facilities. Permission to hunt in this area must be obtained from the Refuge Division of the Louisiana Wild Life and Fisheries Commission, and all hunters must provide their own transportation as well as other hunting essentials. Give the name and address of each hunter. Permits must be in possession while hunting here.

This is typical of one of the nine camps located on the Pass-A-Loutre Public Shooting Grounds. Hunters receive transportation to and from Venice for two-day hunts. Each camp is capable of accommodating eight men. Cooking utensils, beds, decoys, boats, blinds and butane gas for cooking are furnished by the Commission. The fee for a two-day hunt is $5. Hunters are selected at a public drawing, following application in writing.

This year hunters on the open area will be asked to keep a daily record of each hunt as to the number of ducks, geese, and coots killed on each hunt, and at the end of the waterfowl season send this information to the Louisiana Wild Life and Fisheries Commission office in New Orleans. This information will aid the Commission in planning its overall waterfowl management program in Louisiana as well as on the Pass-a-Loutre Waterfowl Management Area, and will also be used in an attempt to obtain a more realistic waterfowl season for Louisiana hunters.

Area Boundaries

Northern boundary, Pass-a-Loutre; western boundary, Jackson Bayou from Pass-a-Loutre to Blind Bay then along the western shoreline of Blind Bay, across the Southeast Pass to and including the western shoreline of Redfish Bay, numerous small bayous, ponds, lagoons, and the coastal mud flats constitute the portion open to the general public.

All parts of the Pass-a-Loutre public shooting grounds west of the above established boundary line are restricted entirely for the controlled hunting program. In addition to the above defined land the area west of South Pass will be included in the free permit area again this season. This area is one of the few spots on the lower delta where hunters may expect to get occasional blue and snow goose shooting.

Regulations for the use of this area have been held to a minimum in the interest of facilitating its use. They are as follows:

1. The use of airboats on these two areas is strictly prohibited.

2. Hunting must stop at noon of each day, except west of South Pass where afternoon shooting is also permitted. This measure is for the benefit of all hunters using the entire area and it allows afternoon and night feeding and resting by waterfowl in the entire Pass-a-Loutre area.

3. Federal and state hunting regulations pertaining to waterfowl must be observed.

4. Hunting will be permitted in this area seven days a week during the entire duck season.

5. Duck, goose and coot shooting only is permitted. Waterfowl retrievers may be used.

6. No rifles are permitted on the area.

7. Hunting must be confined to the designated open area so as not to conflict with the established controlled hunting program.

8. Permits for the use of this designated area will be issued by the Refuge Division of the Louisiana Wild Life and Fisheries Commission, 400 Royal Street, New Orleans, Louisiana and no hunting will be permitted without the required permit which will be issued free on application.

9. Violation of these regulations will result in the immediate expulsion from the area and denial of the privilege of returning to the areas in the future. ✠

SPRING BAYOU

Photographs by Robert Dennie

PICTURE A TRACT of land and water, scenic beauty and offering both hunting and fishing. That's Spring Bayou, Avoyelles Parish, Central Louisiana. Some of the lakes and waterways are studded with stately cypress trees draped with heavy beards of Spanish moss. The ridges offer hardwoods that provide squirrel, rabbit and a limited amount of deer hunting. The lakes abound in bass, bream and big crappie. In the fall and winter, there is considerable waterfowling.

This picturesque proposed new wildlife management area, has been authorized for purchase by the Louisiana Wild Life and Fisheries Commission. It consists of 11,237 acres and the purchase price will be $820,000. Funds for the purchase came from Conservation Fund which is derived from the sale of hunting and fishing licenses to sportsmen.

The land was first appraised by the U. S. Fish and Wildlife Service. The federal agency valued the Spring Bayou tract at $73.00 per acre, the authorized purchase price.

It was pointed out at the public meeting of the Commissioners, during which authorization to purchase the land was made, during the past decade approximately 25 per cent of the land in northeast Louisiana has been converted to pasture land and agricultural uses, principally soy beans.

Effective August 1, the Commission's lease was terminated on Chicago Mill Game Management area, a 110,000 acre tract that for years offered some of the best deer, wild turkey and small game hunting in the state. Within three years, 25,000 acres of the wooded tract will be cleared of timber and placed into soy beans. The remaining wooded acreage will be leased to private hunting clubs.

At the time of the resolution to purchase Spring Bayou, it was pointed out that only through outright, permanent acquisition of available land suited for wildlife management could the sportsmen of Louisiana be assured of a place to hunt and fish in the years ahead. ✠

A squirrel hunter with his two highly trained squirrel dogs is shown heading out for a hunt in the Spring Bayou tract.

Moss draped hardwoods on the ridges that fringe the Sprir Bayou tract will provide excellent sport for squirrel hunter

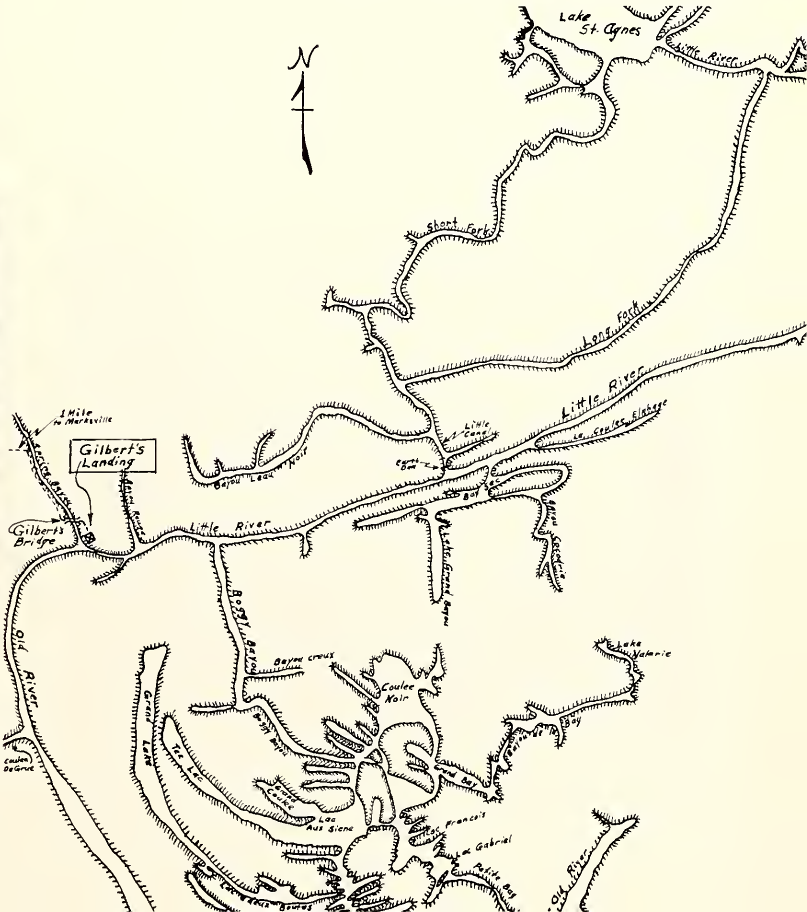
Densely wooded ridges offer excellent gunning for bushytails at Spring Bayou.

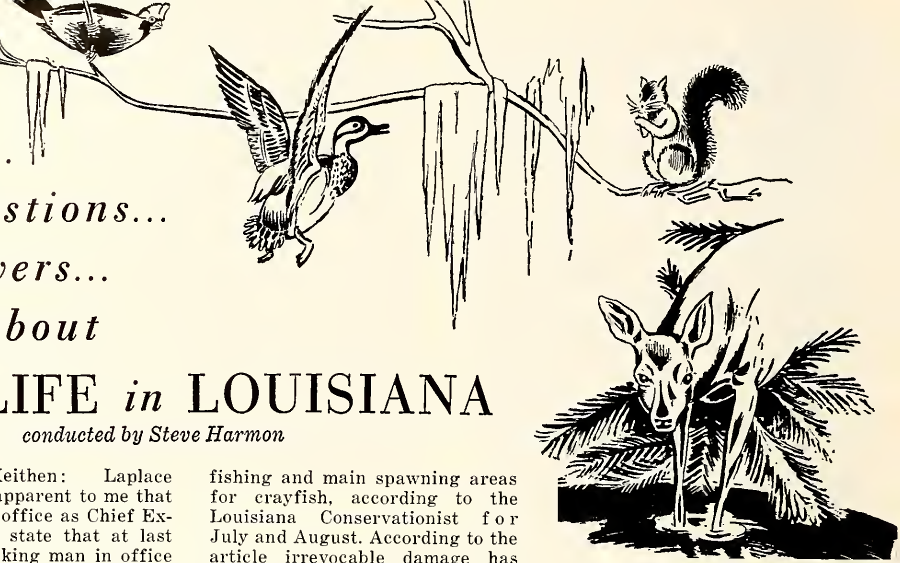
Fishermen find Spring Bayou ideally suited for fishing. The watered acres provide bass, bream and crappie angling.

Spring Bayou, its watered acres studded with stately cypress trees draped with beards of Spanish moss, offers fine fishing and good hunting, including waterfowl in season.

MANAGEMENT AREA

This angler who fished in Spring Bayou proudly displays a good morning's catch. Bass fishing is good and in the spring bream are plentiful. Crappie grow large in this area.





Letters... Questions... Answers... about WILDLIFE *in* LOUISIANA

conducted by Steve Harmon

Dear Gov. McKeithen: Laplace

It has been apparent to me that since you took office as Chief Executive of our state that at last we have a thinking man in office—a man who not only works at putting Louisiana into the twentieth century, but also has the state's best interest at heart.

Louisiana has been blessed by the supreme architect of the universe as a natural water paradise, and man has added his contribution. With a little different history to make our state one of the most unusual in the country—but all of this is slowly being trampled on.

We have also for years been plagued with barge accidents, the latest occurring in Atchafalaya River, completely eliminating the fishing and main spawning areas for crayfish, according to the Louisiana Conservationist for July and August. According to the article irrevocable damage has been done, and unless it is respawned and re-stocked, it will be a useless area as a breeding ground. It also states in the same article that the Mississippi River will change its course in a few years, causing further damage to the Atchafalaya Basin, plus to the drinking water for the New Orleans area, and also it states that unless the Corps of Engineers prevents this happening we are in for some serious trouble. I think the barge incidents will continue to plague us unless some corrective legislative measures are taken.

I applaud your efforts in wanting to push back the swamps for industry, but let us plan our cultural attractions alongside with them, and protect our wild life.

I am very proud to live in this state.

DEREK C. FREER

CHESTS OF CROAKERS—Otis Guichet, Ralph Luther and Joe Bailey, all of New Orleans, caught these bull croakers out from the Chef Menteur Pass on October 1. Cleaned, fileted, seasoned and dipped in batter and fried golden brown, these bulls are a gourmet's delight.

BIG BASS, BIG BOY—This seven and a half pound lunker was caught by young Pete Murphy in Harmon Lake on the Barksdale Air Force reservation. He is the son of Col. and Mrs. Thomas L. Murphy of Barksdale. Pete's prize measured two feet.

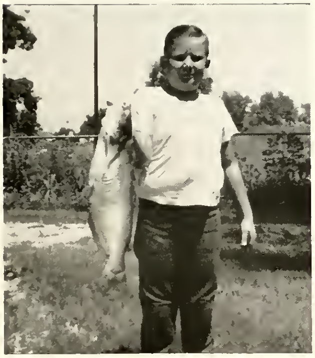
Dear Editor: Spearsville

I would like to say that the Louisiana Conservationist book is very interesting—I have been receiving it for years.

I would like to say something about Union Parish. The squirrel outlook doesn't look very good this year but the deer outlook looks very good this year. We have an abundance of bobcats in Union Parish. The rabbit outlook also is very good; also killed the limit of dove in this area.

I would like to say that the staff of game agents are doing a great job. We are also getting quite a few of black bear up this way.

MIKE HARRELL



BIG CAT, BIG BOY—Mr. and Mrs. W. E. Francis of Trout sent in this photo of their grandson, Justin Coile holding what they say is a blue channel catfish that weighed more than six pounds. Justin, son of Mr. and Mrs. Marshall Coile, Jr., caught the keeper in the Mermentau river.

Dear Editor: New Orleans

Enclosed is a picture of my fishing buddy, 7 year old Terry Toups of Hackberry.

While bank fishing a pond at Hackberry and using light spinning tackle and a plastic worm, Terry hooked and landed this 5 lb. 10 oz. largemouth all by himself.

Seeing a boy this size skillfully play and land this beauty has been one of the greatest thrills of my fishing life.

STANLEY L. PESCHERET

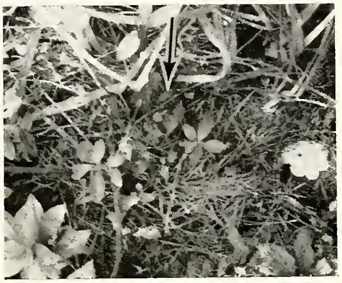
Dear Editor: Minden

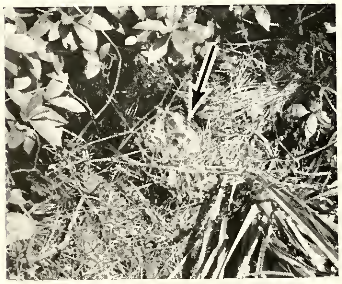
Two game agents with ten (10) squirrels taken from a man caught squirrel hunting in Claiborne Parish on August 19, 1966. The agent on the left is R. D. Odom (Parish Captain) and the other is Thurman Garrett of Claiborne Parish.

ROBERT B. KIMBLE

Dear Editor: Ponchatoula

Tranquilized or maverick? The nesting quail that is barely visible in the center of the top picture must be one or the other. Her nest containing thirteen eggs is a few feet from the front door of Dr. Glenn T. Scott's home on the Springfield Road. She sits very placidly on her nest carefully eyeing all visitors to her bower. Once a day she leaves the nest to take a coffee break and then resumes her chore. She allowed this photographer to get within two feet with the camera. Her nest was found ten days ago when the straw around it was raked away. Mother quail ran away but returned when things were put back in order. According to all rules of nature she should not have returned. She must be either tranquilized or maverick. (Nadia Goodman in The Ponchatoula Enterprise).





HENDERSON LAKE, deep in the heart of the Atchafalaya country, has truly been a hot spot for bass, bream and crappie (sac-a-lait) all summer and early fall. Mr. and Mrs. Elmo Mitchell of Crowley are shown with a catch of bass and sac-a-lait that came from these productive waters.

WATERFOWL HUNTING SEASON FORECAST

R. K. Yancey

FRIDAY, NOVEMBER 18, 1966, will be duck day for an estimated 90,000 members of Louisiana's web-footed hunting fraternity. The duck season will run for 45 straight days and will close at sunset on January 1, 1967. Fine hunting is anticipated in many parts of Louisiana wherever high quality waterfowl habitat is available.

Both seasons, bag limits and shooting hours have been liberalized slightly this year. Last year's season included only 40 days of hunting and an additional 5 days has been allowed this year. The general daily bag limit on ducks remains at 4 and possession limits 8 for the forthcoming season. Not more than 2 mallards can be taken daily with four in possession, but there are no special bag limits restrictions on pintails within the general limit of four. Last year not more than 1 mallard and 1 pintail could be taken daily so there has been a liberalization in bag limits for these two species.

Special bag limit restrictions apply to wood ducks and canvasbacks again this year. Daily bag limits are 2 and possession limits 4 for wood ducks and the same applies to canvasbacks within the general daily bag and possession limits of 4 and 8.

In parts of south Louisiana a bonus of 2 scaup or ring-necked ducks is allowed daily with 4 in possession over and above the general daily bag limit of 4 and 8 in possession. The bonus area lies only *SOUTH* of U. S. Hwy. 90 from the Texas line to New Orleans, northeast of U. S. Hwy. 61 from New Orleans to Laplace, east of U. S. Hwy. 51 from Laplace to Hammond, south of U. S. Hwy. 190 from Hammond to the Mississippi State Line. Hunters are cautioned to check this description closely since the north boundary of the bonus area has been changed from last year.

The bonus on scaup was granted to Louisiana at the request of the Wild Life and Fisheries Commission 4 years ago and has generally proven to be biologically sound. Certainly it has provided many coastal marsh duck hunters with much additional hunting opportunity.

Daily shooting hours this year including opening day will be from 1/2 hour before sunrise to sunset. For the past several years shooting hours have extended only from sunrise to sunset. With hunting allowed during the predawn moments this year it is anticipated that the crippling loss on ducks will be reduced since the birds are generally closer in range at that time.

Reports from Canada have been most encouraging and indicate that ducks enjoyed favorable water and weather conditions and managed to rear large numbers of young this summer. The latest report comes from Ducks Unlimited, a private conservation organization that is doing a wonderful job of preserving and developing waterfowl marshes in Canada. This dedicated group, to which Louisiana annually contributes, reports that—"Good rains across the prairies have safely matured the excellent duck crop forecast in early August and the best fall flight in many years is preparing to move down the flyways. Weather, wind and water will now decide the hunters' 'luck.' "

"Though many late broods must still achieve flight, there is no lack of water except for very local areas. Earlier broods, now strong on the wing, are gathering with adults on the larger marshes preparatory to the flight south. Many blue-winged teal and some pintail have already gone. Flocks of mallard and pintail are making daily flights to the newly-swathed grain fields."

At the time of this optimistic report substantial numbers of migrant blue-winged teal were already in Louisiana having started to arrive in mid-August. These early flights of blue-wings were followed rapidly by scattered numbers of green-wings, pintail and shovelers.

By the time the highly successful 9-day experimental teal season opened on September 17, 1966,

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	NOVEMBER 1966		DECEMBER 1966		JANUARY 1967	
Day of Mo.	*Sun Rises*	*Sun Sets*	*Sun Rises*	*Sun Sets*	*Sun Rises*	*Sun Sets*
1			6:38	5:00	6:56	5:11
2			6:39	5:00	6:56	5:12
3			6:40	5:00	6:57	5:12
4			6:40	5:00	6:57	5:13
5			6:41	5:00	6:57	5:14
6			6:42	5:00	6:57	5:15
7	6:18	5:09	6:43	5:00	6:57	5:16
8	6:19	5:08	6:43	5:00	6:57	5:16
9	6:19	5:08	6:44	5:01	6:57	5:17
10	6:20	5:07	6:44	5:01	6:57	5:18
11	6:21	5:06	6:45	5:01	6:57	5:19
12	6:22	5:06	6:46	5:01	6:57	5:20
13	6:23	5:05	6:47	5:01	6:57	5:20
14	6:23	5:05	6:47	5:02	6:57	5:21
15	6:24	5:05	6:48	5:02	6:57	5:22
16	6:26	5:04	6:49	5:02		
17	6:27	5:04	6:49	5:02		
18	6:28	5:03	6:50	5:03		
19	6:28	5:03	6:50	5:03		
20	6:29	5:02	6:51	5:04		
21	6:30	5:02	6:51	5:04		
22	6:31	5:02	6:52	5:05		
23	6:32	5:01	6:52	5:06		
24	6:32	5:01	6:53	5:06		
25	6:33	5:00	6:53	5:07		
26	6:34	5:00	6:54	5:07		
27	6:35	5:00	6:54	5:08		
28	6:36	5:00	6:55	5:08		
29	6:36	5:00	6:55	5:09		
30	6:37	5:00	6:56	5:09		
31			6:56	5:10		

Ted Joanen, Commission biologist, is shown during the September teal season recovering a blue winged teal that he bagged. This recovery scene will be repeated thousands of times by state waterfowlers during the duck season that opens November 18 and lasts through January 1.

concentrations of blue-wings were available for hunting in many parts of the coastal marshes, the rice fields and at Catahoula Lake. Bag limits of blue-wings were common in many of these areas and fine hunter's success was enjoyed until the close of the season on September 25.

Much recreational opportunity was afforded the state's sportsmen during the teal hunting season. A total of 37,748 teal hunting permits were issued prior to the season to prospective teal hunters. The vast majority of the hunters stayed within the hunting regulations but a limited few did take advantage of the season to intentionally shoot over the bag limit and take a few ducks other than teal. This situation must be corrected if we are to expect additional September teal hunts in the future. Without a doubt the early teal hunting season is biologically sound in Louisiana but strict observance of the hunting regulations has been considered an essential element in making this experiment a success.

By the time the teal season ended on September 25, several thousand widgeon, a few gadwall and many additional pintails, green-winged teal and shovelers had arrived in Louisiana.

The blue-winged teal migration was expected to hit its peak during mid-October and a rapid buildup of duck numbers took place at that time. Initial arrivals of mallards have shown up but the first major flight of the big green heads will not be expected to occur until the first week of November along with large numbers of gadwall and diving ducks including scaup, ring-necked ducks and a few redheads and canvasbacks.

By the time the duck season opens on November 18, Louisiana should have 3.5 to 4 million ducks on hand with additional numbers of mallards coming in with each hard cold front particularly in mid-December.

Most of the ducks will be in the coastal marshes and flooded rice fields of southwest Louisiana, however, good concentrations are expected in the lower Atchafalaya Basin and at Catahoula Lake, north Louisiana's most important waterfowl area. The best hunting will be available on managed marshes, in the rice fields which have been flooded out for ducks and on the high quality natural areas.

Habitat conditions will vary widely around the state. In southwest Louisiana, the state's most important wintering ground, water conditions should be excellent. Hundreds of thousands of acres of marshes have, however, remained in a flooded state all through the summer thereby preventing germination and growth of wild millet and other seed producing annual grasses. Total production of food from these plants will be the poorest in recent years. It is, however, anticipated that seed produced last year and for the past several years will be available for use by ducks in the marshes. The reduction in millet will be compensated for to some extent by the tremendous increase in widgeon grass production this summer and fall. This is a submerged aquatic plant found in brackish marsh ponds of south Louisiana and is a favorite food for several species of ducks.

In southeast Louisiana, particularly below New Orleans, the marshes have largely recovered from the devastating effects of Hurricane "Betsy" that occurred in September of 1965. Excellent stands of widgeon grass have been produced in brackish marsh ponds and stands of wild millet are to be found scattered over thousands of acres of inland fresh marshes. At the mouth of the Mississippi River food conditions for ducks are the best in several years. In the lower Atchafalaya Basin habitat conditions are similar to last year and large numbers of ducks of several species are expected to be found in this area.

At Catahoula Lake, water levels receded during mid-summer exposing thousands of acres of shoreline and this made possible the production of excellent stands of food plants for ducks. This lake will attract and hold tens of thousands of mallards and pintail provided water levels remain normal this winter. The shallow water portions of the impoundments in north and western Louisiana should provide fair duck hunting, particularly when new flights of birds are passing through this section of the state. Much of the waterfowl habitat in northeast Louisiana has been lost through drainage, however, the shallow water lakes and sloughs that remain should attract huntable populations of ducks.

In January 1966 about 5 million ducks were found during the waterfowl census conducted by the Wild Life and Fisheries Commission. Many of the survivors of the round trip to the breeding grounds in Canada this summer will be back in Louisiana with their young for opening day. Taking all factors into consideration an excellent duck season is expected.

Of interest to many will be the start of the goose season at thirty minutes before sunrise on November 7. A total of 70 days of hunting is being allowed this year in Louisiana and the season will end on January 15. Daily bag and possession limits will be 5 but not more than 2 white-fronted geese can be taken. Louisiana will again have a closed season on Canada geese as it has for the past 3 years.

It is expected that three hundred and fifty to four hundred thousand Blue and snow geese will be on hand along with more than twenty thousand white-fronted geese when the season opens. The best hunting will be available in the south Louisiana marshes that have been productive of three-cornered grass (Scirpus olneyi), and freshly burned wire grass (Spartina patens) marshes. In recent years large numbers of blue and snow geese have utilized the lower rice fields of southwest Louisiana and it is anticipated that this trend will continue.

More three-cornered grass will be available as food for geese this year than in the past several years in the coastal years. This holds particularly true east of the Mississippi River where Hurricane "Betsy" killed out large acreages of wire grass. Also in southwest Louisiana heavy rainfall during the summer of 1966 apparently favored this plant to a great extent. The roots of three-cornered grass are heavily utilized by both blue and snow geese.

The special bag limit restriction of one pintail daily imposed last year was removed for the upcoming waterfowl season. Hunters will be allowed four daily or eight in possession. The speedy pintail is considered the finest of all ducks by many Louisiana hunters.

During January 1966 four hundred thousand geese were found in Louisiana during the aerial waterfowl survey. Since the blues and snows are Artic nesters no reports are available at this time regarding production success this summer.

Populations of Canada geese have been ranging at about eight thousand in Louisiana for the past ten or twelve years. Closed hunting seasons in Louisiana during the past three years have not resulted in an increase in Canada goose numbers. It has, however, apparently prevented a further decline in the remnant wintering flock that comes to our state. The total kill from Louisiana's wintering flock as the birds move south through

This is a typical flight of teal ducks. They provided excellent sport during the September teal season and, although most of the teal will have departed before the regular duck season, those that remain will provide fine shooting and excellent table fare.

It took Ted Joanen only an hour to collect a full bag of blue winged teal, allowing pintails and other ducks to pass by during the September teal season. This early teal season allows waterfowlers to harvest a few of these fine ducks which for the most part migrate out of the country before the regular duck season, returning in the spring when waterfowling is over. The September teal season is a forward step in waterfowl management.

Canada and the northern parts of the Mississippi Flyway, where the hunting season is open is apparently equaling the annual production. Otherwise some increase in numbers should be taking place. Only through banding of Canada geese in Louisiana would it be possible to pinpoint the location and extent of kill during migration. Until this can be done and a solution to the problem worked out, it is important that the State's remnant flock be protected.

Coots began moving into Louisiana in mid-September and the season on these birds will extend from November 18 to January 1, 1967, concurrent with the duck season. The daily bag limit will be 10 with 20 in possession. These birds will be pursued by hunters mainly in the marshes of southeast Louisiana. This has been the traditional area in the state where coots are considered an important game bird.

Shallow lakes producing dense stands of submerged aquatic plants are particularly attractive to coots. This applies to both brackish and fresh marsh ponds, where the best coot hunting will be available.

As is usually the case, hunting regulations controlling the taking of migratory waterfowl are complicated and each hunter should study these in detail along with identification of ducks and geese before going afield. By so doing a more successful and enjoyable hunt can be made and possible embarrassment avoided since a concerted effort will be made to enforce the regulations by State and Federal agents.

The Louisiana Wild Life and Fisheries Commission and the State's sportsmen have made great contributions to management programs designed to perpetuate the continental waterfowl resources. To name but a few this includes the acquisition and development of 185,000 acres of coastal waterfowl refuges, acquisition and development of 140,000 acres of waterfowl management areas, preservation and maintenance of hundreds of thousands of acres of privately owned marshes and wetland areas, annual contributions of $65,000 to Ducks Unlimited for the retention and improvement of marshes for waterfowl production in Canada, contributions ranging from $250,000 to $300,000 for waterfowl management at the Federal level through the purchase of duck stamps, and both intensive and extensive research programs designed to uncover facts necessary to the continuation of waterfowl populations. These efforts on the part of Louisianians have resulted in expenditures of millions of dollars, but for those who enjoy and appreciate the outdoors and the sport of duck hunting it will have been considered a highly worthwhile endeavor when the season opens. Good luck and good hunting. ✠

Changes in Deer Season Announced

The Louisiana Wild Life and Fisheries Commission at its regular monthly public meeting in New Orleans September 27 voted on certain changes in regulations pertaining to the upcoming deer hunting season.

At the request of the Madison Parish Police Jury and upon recommendations of commission biologists, there will be a five-day, any-sex deer season on Diamond Island beginning November 25, 1966. The special season will coincide with other either sex deer hunts previously scheduled for parts of Madison and Tensas Parishes.

Leslie L. Glasgow, commission director, also revealed that at the request of the Tensas Police Jury, backed by recommendations of commission biologists, there would be a five-day, any-sex deer season in Ward Five of that Parish beginning November 25, 1966 along with most other Wards in the Parish.

In other action connected with the deer hunting season, the commission voted to close all deer hunting in Plaquemines Parish for this year. This was done at the request of the Plaquemines Parish Commission Council. Its Planning Commission believed that deer populations in the Parish had not fully recovered since damage done to the herds by Hurricane Betsy in September, 1965.

The Commission also complied with a request from the U. S. Army and closed approximately 6,500 acres of the Kisatchie National Forest to deer hunting this season. The area closed is northwest of the Kisatchie lookout tower.

Glasgow explained that this was done as a safety measure because the Army would have troops training in that portion of the National Forest during the upcoming deer season. ✠

WILDLIFE EDUCATION

Sam C. Murray

CONSERVATION IS the responsibility of everyone. Each of us is obligated with the care and wise use of our wildlife resources. Through the years we have burned forests, drained our wetlands and overgrazed our open range. Now we are faced with muddy waste-laden rivers, eroding land and diminishing wildlife.

The picture is not entirely bleak; through intensive research we have learned much about our wildlife. Wildlife biologists have learned to manipulate habitat in such a way that we receive the most in wildlife for our recreation dollars. For the most part, wildlife management is far ahead of public acceptance. Understanding is not a matter of not knowing what to do, but rather getting the public to accept and comprehend new ideas in wildlife management.

Modern wildlife management sometimes disproves some of the old ideas about proper harvest of game. For instance, at one time proper deer management meant "bucks only," but now with growing herds the taking of either sex is sound management.

The Commission realizing that our sportsmen and future sportsmen should be informed of what is being done in the field of wildlife management and research, the Wildlife Education Section was created.

This section was first initiated in September 1958 when a pilot program was set up in two schools in Lafourche Parish. These programs were so well received that the State Superintendent of Education authorized the Commission to conduct special wildlife classes in all of the state's schools. From this meager beginning and with the help of all Divisions within the Commission, this section has blossomed into a very active organization.

Knowing that the young people of today will be the leaders of tomorrow, Wildlife Instructors are now taking Louisiana's fabulous wildlife story into practically every school in the state. Emphasis is placed on the importance of the wise use of all our natural resources and especially upon the management of fish and wildlife. Students are told of the recreational, economic and aesthetic values of these resources. Each school year an average of some 300 wildlife programs are presented every month to about 15,000 students.

Even though this is the primary job of the Instructors their secondary job is to take the Commission's wildlife story to various civic organizations, sportsmen leagues, garden clubs, church groups and others who request programs for the purpose of becoming better acquainted with the many activities and problems of the Commission. People in all walks of life are told of the importance and need for their cooperation and help if our fish and wildlife populations are to be maintained and perpetuated for future generations to enjoy.

During the summer months, Instructors are busy in youth camps over the entire state. Here, they lecture during the day, take the youngsters on nature study trips, show wildlife movies at night, actually living at the camps and becoming "one of the gang." Instructors also work with Boy Scout groups by conducting field trips and acting as conservation merit badge counselors.

To perform the task assigned them, Instructors must be well versed in every phase of activity taking place within the Commission. This is accomplished by working with the biologists, enforcement agents, research and study leaders, assisting during the managed hunts on our Wildlife Management Areas and constantly studying and reading information pertaining to wildlife. In addition, they are equipped with the best in visual aid materials, such as movie and slide projectors, mounted birds, mammals and reptiles, maps and charts, just to mention a few.

In order that the general public might realize the importance and beauty of our wildlife resources, displays are erected each year at fairs and festivals from one end of the state to the other. These displays, which depict our various species of wildlife in natural setting, are viewed by hundreds of thousands of our citizens.

For the past several years the Education Section has had the privilege and pleasure of working with some of the law enforcement officers and various civic clubs in coordinating and participating in "Firearms Safety Clinics" for young hunters. We believe that if a youngster, who attends one of these "Clinics," will hear just a word or see one thing that would prevent an accident that might cause him to lose a finger, an eye, a limb or a life; our time and efforts and the sportsmen's money has been well spent.

The Education Section also has a number of publications about Louisiana's fish and wildlife and their proper management. These are made available free to teachers, libraries and students upon request. In addition, a film lending library containing film on our wildlife and fisheries resources, is operated with film being loaned, free of charge, to interested groups. The only cost being the return postage on the borrowed film.

Wildlife Instructors are assigned to each District of the Commission. If you are interested in having a program presented on Louisiana's fish and wildlife resources to your school or your organization, you may obtain these services free, by writing or calling. ✠

DISTRICT OFFICES

District I Headquarters, P.O. Box 224, Minden, Louisiana; District II Headquarters, P.O. Box 4004, Ouachita Sta., Monroe, Louisiana; District III Headquarters, P.O. Box 278, Tioga, Louisiana; District IV Headquarters, P.O. Box 426, Ferriday, Louisiana; District V Headquarters, P.O. Box 405, DeRidder, Louisiana; District VI Headquarters, P.O. Box 585, Opelousas, Louisiana; District VII Headquarters, P.O. Box 14526, Southeast Sta., Baton Rouge, Louisiana; District VIII Headquarters, 400 Royal Street, New Orleans, Louisiana.

NEW METHODS

(Continued from page 2)

The use of chemicals to control weed problems in farm ponds and small lakes, if privately financed by the owner or groups of interested people, is not only possible but practical.

At the present time, the drawdown technique is the only economical control method available to the Commission for use on our large impoundments and lakes. On lakes and impoundments equipped with an adequate control structure, it has been found that most submerged weeds can be effectively and economically controlled by rapidly lowering the water during early July. This exposes the plants to the drying action of the air and the hot summer sun. The plants decompose in the open air. This prevents depleting the amount of oxygen in the water and a possible fish kill. The nutrients which have been bound up in the tissues of the plants are released as the plants decay. When the water is returned to the area, these nutrients then again become available and the water is made more fertile. The increased fertility promotes more rapid growth of the fish. Winter drawdowns have also shown some promise.

Mechanical removal has been suggested. On most large areas this involves underwater mowing or cutting. In our area, regrowth of vegetation is very rapid and frequent cutting of new growth would be necessary. In a recent study, it was found that one such cutting was costing in excess of $50.00 per acre. Even if costs were more reasonable, the large number of logs, stumps, and other obstructions which are present in most of our impoundments would make the use of machinery highly impractical. On small farm ponds, the average pond owner seldom has the time or the inclination to do the necessary hand removal.

Biological control methods have recently been receiving wide publicity. Interest has been expressed in the possibilities of such a method being used in our State. Plant-eating fish, insects, and the manatee or "sea cow" have been suggested as possible answers to our problem. The idea is not new. Some twenty years ago, there was even a move to import the hippopotamus to remove our aquatic weeds.

Unfortunately, the tested fish of the genus Tilapia, which were somewhat effective, have been unable to survive our winter water temperatures. The use of the manatee and the hippo is also impossible for the same reason. Several fish of the Carp family have also been tested. It was found that large numbers were necessary to effectively reduce weed growth. The silt stirred up by these fish when feeding is detrimental to the eggs and growth of both bass and bluegill. A biological control agent which could live in peace and harmony with our native fishes would be an excellent solution to our problems, but none has been found to date. Until research workers can find such an agent, we must use the only practical tools at our disposal: fluctuation of water levels on large bodies of water and chemicals for ponds or to solve special limited problems.

No other phase of weed control work demands such a careful choice of material, attention to safety, and degree of technical proficiency as must be maintained when combating aquatic weeds with chemicals.

Common sense dictates that nothing be used in the water that would be harmful to man or his animals. Fish must also be considered, as well as possible danger to nearby desirable trees, shrubs, and crops.

A number of books, bulletins, and pamphlets are available which contain information on aquatic weed control. Some of these publications will be found to recommend the use of sodium arsenite for the control of underwater weed growth. This chemical is highly poisonous to fish, as well as warm blooded wildlife, livestock, and man. The use of sodium arsenite for aquatic weed control has been discouraged by the Commission for many years. It is no longer necessary to use such a hazardous material.

Great progress has been made during the past five years in developing chemical controls for aquatic weeds. There are an ever increasing number of materials available which have been formulated for this purpose. These new chemicals are designed to have a very low level of toxicity to the user, fish, other wildlife, and livestock. Some are formulated to control only certain groups or types of plants, leaving other plants unharmed. Interest in this type of "controlled" control is growing, and more such materials will probably soon be developed.

WATER HYACINTH *(Eichhornia crassipes)*
Breathtakingly beautiful with its almost orchid-like purple blooms and dark green leaves. Rapidly reproducing vegetatively it can cover a vast area of water in just one year. Tiny seed fall to bottom and lie dormant for many years. Effectively controlled by 2, 4-D sprays, it is a world wide problem which costs millions of dollars each year. See next photo.

The proper chemical must be used at the right time, the right place, and the right season. If you do not have the facts, it would be well to carefully check both the literature and the labels until you are familiar with all of the capabilities, cautions, and restrictions. If you are still in doubt, write to us for the latest information on our research. We do not have all the answers, perhaps we never will; yet we should be able to be of assistance to you. Over the years we have tested a large number of chemicals, under a wide range of conditions, in an effort to find answers for our weed problems. We have found that there is a wide range of both capabilities and hazards between different formulations of a given herbicide. These formulations will also vary from brand to brand. *READ THE LABEL CAREFULLY!*

The Commission has conducted this research in an effort to learn the capabilities and hazards of each material when used under local conditions. This knowledge can prevent costly and embarrassing mistakes, disappointment, and wasted time and effort. Chemicals used or suggested for use in this paper have been evaluated for effectiveness in the field, under field conditions. Each material has also been carefully checked and screened for its toxicity to fish at our Monroe laboratory. We also check for possible danger to desirable nearby vegetation.

The materials mentioned here can be expected to give reasonably satisfactory control under most conditions. None of them is a cure-all. Do not expect any of these herbicides to remove weeds permanently. Retreatment will probably be necessary every two to three years. This is particularly true when seed bearing plants are involved. Spot treatments on seedling growth should be made as they appear.

For easier understanding and to prevent confusion in the identification of the chemicals mentioned, brand names and trade marks are used in this paper. The use of a brand name does not constitute an endorsement of the named product by the Commission or the writer. The chemicals named in this paper have been tested and found effective as described. Similar formulations produced by other manufacturers, which have not yet been tested, may give comparable results.

Research has demonstrated that plants growing under the water, or which have the greater portion of their surface under water, can best be controlled by treating the water in which they grow. To calculate the amount of chemical needed for such a treatment we base our computations on the number of acre-feet of water in the area to be treated. An "acre-foot" is simply a cubic measurement which is used to describe the volume of water in an area having 1 acre of surface and a depth of 1 foot. A 1 acre pond having an average depth of 4 feet would be said to contain 4 "acre-feet". The term "parts per million" is also frequently used in label directions. This means 1

WATER HYACINTH *(Eichhornia crassipes)*

This is what can happen in just one year's time! DO NOT TRANSPORT WATER HYACINTH TO UNINFESTED WATERS.

WHITE WATERLILY *(Nymphaea odorata)*

This beautiful plant is often used as an ornamental but uncontrolled growth can ruin a pond. Silvex and Aquathol-Plus are used for control.

unit of the chemical applied to 1 million units of water. Calculations are usually based on the weight of active ingredient in a given formulation of chemical. On rare occasions, parts per million by volume may be used. A handy rule of thumb to remember: In 1 acre-foot of water, 2.7 pounds active ingredient is 1 ppm. In 1 acre-foot of water, roughly 1/3 gallon is equal to 1 ppm (by volume).

It is very important to know which plant or groups of plants are causing the problem before attempting a chemical control program. Response to a given herbicide will vary widely from plant to plant. Effective and economical control is possible only when the problem plant, or plants, is treated with the chemical best suited for its control.

It is common practice in Louisiana to lump aquatic plants into three groups: "mosses", "grasses", and "lilies". These terms are much too general to be of value when planning a control program and selecting an herbicide. It isn't too difficult to learn to recognize most of our common aquatic plants and to call them by their accepted common names. Each plant also has a "scientific name" which is much more precise and which is recognized by scientists anywhere in the world. With a little practice, even a child can learn to use the terms and identify most plants at least to the proper "genus". A scientific name serves the same purpose as your complete full name. Genus has roughly the same meaning as your last or surname. "Species", which always follows the genus, precisely identifies a given individual in the same manner as your given name. By using the following lists, by the process of elimination, you should soon be able to name many of our aquatic plants with considerable accuracy. Plants, as well as people, live in different places and have different shapes, sizes, other physical features. We use these features to separate them by name.

First, notice where and how the plant grows. Once this is established, most of our common aquatic weeds can be identified by checking its general appearance and comparing this with the descriptions given. The list first places the plants into groups, based upon where and how they grow using the following headings:

SUBMERSED: This includes those plants growing completely under the surface of the water, with the exception of possible flower stalks. They may be rooted to the bottom or float freely through the water.

EMERSED: These plants are those which are almost always rooted to the bottoms, their limp stems extend upward through the water to the surface. Some have leaves both on the surface and below the surface. Surface leaves may be quite different from those growing underwater on the same stem. Some of the flowers of this group are large and beautiful.

FLOATING: These plants may originally be rooted, but commonly float free upon the surface of the water and require no further contact with the soil. They often form dense mats or rafts.

MARGINAL: Plants which require moist conditions but which otherwise possess all the characteristics of a terrestial plant are included in this group. They may be found along the edges or growing in shallow water. All are rooted in the soil.

ALGAE: These simple, one-celled plants may be single, in clumps, or in long thread-like strands. They are commonly found under the water surface, but may at times rise to the surface to form scums or crusts. They are frequently very difficult to identify without a microscope and all require special control methods.

SUBMERSED

Southern naiad, bushy pondweed: *Najas guadalupensis*

Always under water. A grass-like plant. Stem very *small* and *limber*. Small, blade-like leaves in pairs, opposite each other on the stem. Single fruits sometimes found present on upper side of the leaf next to the stem.

Coontail, moss, etc.: *Ceratophyllum demersum*

Always under water, but may be washed onto shore. Commonly breaks free from the bottom and floats free in the water, under the surface. Sometimes in dense mats or clumps. *Stems limp,* often branched. *Leaves in whorls of 8 and all similar. Each leaflet on whorl is Y-shaped.* Rough or toothed to touch.

Muskgrass, Chara: *Chara vulgaris*

Actually an algae, but included here because it so closely resembles coontail. Always under water. Frequently forms dense clumps or mats *on the bottom. Gives of a musky, garlic-like odor when crushed.* Rough to the touch. Leaves all similar, in whorls of 8, *but leaflets are V-shaped* and slender.

Waterweed, American elodea: *Elodea canadensis*

Always under water except for small white flower which in season floats on the surface of the water. The leaves are blade-like, all similar, in whorls of 3 or 4 along the limp stem.

Broadleaf watermilfoil: *Myriophyllum heterophyllum*

Rooted, stems limp but strong. Leaves in whorls of 4. Underwater leaves are finely divided and somewhat *resemble a fish skeleton.* Leaves at tip of stem often rise *above the surface of the water,* are in whorls, resemble small elm leaves. *They are not divided.* Underwater leaves brown or black, those above the surface brownish green. Stem often red in color. Plant often impedes boating and swimming. Note: A similar species has been reported to be present in Louisiana, but Broadleaf is the most common.

Fanwort, Cabomba: *Cabomba caroliniana*

Always under water except for small white flowers on slender stalks which float on surface. *Leaves fan-shaped.* Leaves are opposite, but are arranged along the limp stem so as to appear whorled. Leaves finely divided. Rooted. Commonly found in clean, clear water.

Bladderwort: *Utricularia* (several species)

Completely under water except for flower stalks. Free floating. Leaves alternate, finely dissected, *bearing many small bladders. Flowers* shaped like those of pea family, *usually yellow,* raised erect above surface on slender stalks. One species develops a spoke-like inflated float from which the flower stalk arises.

EMERSED

Spatterdock, cowlily: *Nuphar advena*

Rooted to bottom. *Leaves thick,* broadly *lance shaped* with large *central rib.* Stems heavy. *Flower yellow,* in a *tight ball shape,* flower stalk extends above the surface.

American lotus, yonquapin: *Nelumbo lutea*

Rooted to bottom. *Leaves* are large and *round, not notched,* may float flat on surface or *rise several feet above the water* on strong, centrally attached stems. *Flowers are yellow,* large, *open,* extended several feet above the surface. *Seedpods* visible after petals drop, remain standing erect on the strong stems. *Seed pod* is cone or *funnel shaped,* seed in pockets in the flat surface of the wide end.

White waterlily, fragrant waterlily: *Nymphaea odorata*

Rooted to bottom. Leaves *round,* but *notched from center to edge of leaf.* Leaf attached to limp stem at center of leaf. Veins radiate out from center to edge. *Leaves and flowers float flat on surface of water. Flowers white,* open.

Watershield: *Brasenia schreberi*

Rooted to bottom. *Leaves oblong* or shield shaped, thin, *purple underneath.* Float flat on water surface. The limp stems covered with a gelatine like sheath.

Pondweed, willowleaf pondweed: *Potomogeton* (many species)

Rooted to bottom. *Leaves lance shaped, many ribs,* float flat on water surface. Leaves *not* opposite each other along stem but alternate. Leaves of the different species vary widely in size from 1 to 6 inches from base to tip. Flowers or *fruit in spikes or heads* often *protrude out of water.* The *floating many veined leaves and the terminal fruit spikes readily identify the potomogetons. Underwater leaves* may *differ greatly from surface leaves.* Some closely resembling grass. The stems are jointed, with fibrous roots at lower nodes. Some species do not rise above the surface or have lance shaped leaves, but the terminal spike, if in season, is useful in naming the plant. There are several dozen recognized species and even experts are sometimes "stumped" without a microscope and reference library.

Eelgrass, wild celery: *Vallisneria americana*

Rooted. *Leaves long and ribbon-like* from basal cluster. Leaves have *no pronounced central rib.*

FLOATING

Water hyacinth, "lily": *Eichhornia crassipes*

Float free on water surface, sometimes in dense mats. May be found rooted on shorelines or mudflats. Leaves entire, broad, *dark green,* in basal clusters. *Below the flat leaf,* the petioles are *enlarged, forming ball-like floating bodies.* Flowers borne on erect stalk, very beautiful, may be *purple,* blue or violet, one stem may carry 6 or more flowers.

Frogbit: *Limnobium spongia*

Float free on water surface. Resembles waterhyacinth because of floats, but has a *single, white "daisy-shaped"* flower. Usually a much smaller plant.

Float free on surface of water, sometimes in mats or clumps. *Leaves light green,* velvety to touch, and has *many* very pronounced *ribs. No* obvious *flowers.* The plant resembles an open head of lettuce.

Duckweed: *Lemna minor* (and others)

A number of species are present in the state, but all have the same characteristics and there is seldom need for precise identification. All are *tiny, ½ inch or less in diameter,* usually with 2 to 4 *green leaves* which float flat on the surface. Each leaf may have 1 to several rootlets extending from the bottom of the leaf. Drift over the water surface and can form dense populations which can cover the water surface to a depth of several inches. *Often mistaken for green floating seeds.*

Watermeal: *Wolffia* (several species)

Plants *very small. Resemble green cornmeal floating on or at the surface* of the water. Bright *green, no rootlets.*

Waterfern: *Azolla caroliniana*

Plants *small,* floating free, *flat on water surface.* Mats appear *brown or dark red.* If inspected closely, leaves are made up of small *overlapping scales.*

MARGINAL

Parrotfeather: *Myriophyllum brasiliense*

In shallow water. Rooted. May rise almost 1 foot above the surface. *Entire plant soft green in color. Leaves finely divided,* placed in tight whorls on the stem, all similar, resemble a fish skeleton.

Waterleaf: *Hydrolea quadrivalvis*

Stems weak, but tip may rise a foot or more above the ground. Leaves *alternate* and *entire. Blue or purple flowers,* in axillary clusters. Axils *armed* with a sharp, *straight, needle-sharp spine. Any blue flowered* marginal *plant,* with *sharp spines* at the point where the upper side of the leaf joins the stem will probably be waterleaf.

Waterprimrose: *Jussiaea diffusa*

Stems weak, extending out from shoreline to *float limply on the water. Leaves alternate,* entire, *dark green. Flowers yellow,* about 1 inch in diameter, with 5 petals.

Waterpurslane: *Ludwigia palustris*

Erect, branched, may grow to be *4 to 5 feet tall.* Leaves alternate. *Flowers yellow,* at attachment of leaf to stem, on *short calex tube.*

Watersmartweed: *Polygonum* (several species)

Plant may be erect or creeping. *Stem nodes covered by sheath.* Leaves *alternate,* smooth and glossy. Tiny *pink, white, or greenish flowers* in *erect spikes.*

Alligatorweed: *Alternanthera philoxeroides*

Stems creeping, but may extend upward for several feet. *Nodes on stems bare. Leaves opposite* and attached to stem at the nodes. *White, cloverlike flower at tip of stem.* May be found singly, or in dense mats.

Pennywort, dollarwort: *Hydrocotyl* (several species)

Small plants, rarely 1 foot tall. *Leaves round,* edges sometimes are shallowly scalloped, *held erect* by petiole which is *attached at the center of the circular leaf. Flowers* very *small* and *white.*

Arrowhead: *Sagittaria* (many species)

Leaves arise from rosettes. Wide variation in leaf shapes and size but most are usually *shaped roughly like an arrowhead.* Petiole usually long and erect. *Flowers white,* with *only 3 petals.*

Southern watergrass: *Hydrochloa caroliniensis*

A *small grass* with a *limp, thread-like stem and petioles.* Leaves are *short and grasslike* continued as a *sheath below base of blade.*

Sedge: *Carex* (many species)

An erect, grass-like plant. *Stems commonly 4-sided.* Seed heads in loose clusters.

Rush, needlerush: *Juncus* (several species)

An erect plant. *Leaves arising from dense basal clumps* resemble *round, long, sharply pointed stems.*

Bulrush: *Scirpus* (several species)

Plant erect, *stems usually 3-sided.* Seed in *scaled, pinecone-like spikelets,* extending from stem, and *usually in clusters.*

Cattail: *Typha* (several species)

Tall (3 to 8 feet) plants. *Long,* smooth, *ribbon-like leaves. Seeds in terminal cylindrical spikes on erect stalks.* Spikes resemble a cat's tail hence the name. *Leaves, seen at a distance, always appear to be flat.*

Giant cutgrass: *Zizaniopsis miliacea*

Tall, (to 6 feet and over). *Grasslike appearance. Leaves* often 3 feet in length *with sharp cutting edges.* Seedhead resembles Johnsongrass. *Leaves, seen at a distance, usually seem to be twisted.*

Buttonbush: *Cephalanthus occidentalis*

Woody plants commonly found on margins and in shallow water will usually be willow or buttonbush. Willow is well known and needs no description. Buttonbush has *opposite, broad, smooth margined leaves. Flower heads white, ball-shaped, hanging* at the *ends of long flexible stalks.*

ALGAE

Algae are small plants and have no true leaves or flowers. They may float or be attached to underwater surfaces. In warm weather they multiply rapidly, some float to the surface to form scums. Plankton algae give a body of water a green "bloom" or color. Filamentous algae are usually found as long threadlike strands. A microscope is needed for reliable identification. Roughly, they can sometimes be separated by "feel". *Cladophora* is cottony. *Spirogyra* is slimy. *Pithophora* resembles horsehair. *Hydrodictyon* forms a miniature net.

Experience has shown that the average farm pond which is over two or three years old will be found to contain aquatic weeds from several, if not all, of the plant groups, if no action has been taken to suppress their invasion. Underwater plants, which require treatment of the total volume of water present, are difficult and expensive to control once they have become established. Clear water, in our State, produces an abundant crop of these plants. A good plankton algae bloom in the water will prevent sunlight from reaching the bottom. This shading discourages the growth of most underwater weeds.

The use of commercial chemical fertilizer to promote the growth and proliferation of the tiny plankton algae is therefore a good practice. If weeds are already present, the use of this technique for weed removal is of questionable value. Fertilization can stimulate weed growth instead of bringing about its suppression. The growth of undesirable filamentous algae is sometimes increased by fertilization. The choice of a fertilizer should be made with care and the proportions of the components formulated to fill the needs of the area being treated. Consult Mr. James T. Davis of our Fisheries Section for recommendations best suited to your waters. The practice of using the same fertilizer for both your land and water is not recommended in many cases.

A number of materials are available which can be used to control most undesirable plants. The choice of which to use depends entirely on what you wish to accomplish. Selective herbicides are on the market to remove only certain species and leave others unharmed. In skilled hands they can be very effective and are preferred by many specialists. The average pond owner however wants to remove as many of his weeds as possible with one treatment if it will not harm his fish. This "shotgun" method can be used and requires very little technical "know how".

Many of the broad leaf plants, growing on margins or extending above the water surface, can be controlled by spraying to wet with a solution containing either 2,4-D or silvex. *We use and recommend the amine salt formulations because they are less toxic to fish and have less volatility than ester formulations.*

It is of the greatest importance that enough of an effective surfactant be added to the spray solution to insure complete wetting, coverage, and adhesion of the solution to the maximum area of the surface of the plants. In research tests, consistently good results have been obtained when using "Multifilm X-77" as the surfactant. This product is available either under the Colloidal Products Corporation's or Chevron Chemical's "Ortho" label.

In our hyacinth control program, we use a formulation which contains 4 pounds of the amine salt of 2,4-D per gallon. One gallon of this herbicide is mixed with 200 gallons of water to treat an acre of surface vegetation. Surfactant is added until the correct wetting and adhesion of the solution is obtained. With X-77, a pint is usually sufficient. The surface of the plant must be covered with a thin film of the solution. Droplets, forming on leaves when insufficient surfactant is used, often cause "pin-hole" burning but little effective control.

If new growth appears, re-spray before flowers or seeds can be produced. This is particularly important with rapidly spreading species such as the hyacinth. Alligatorweed also can recover rapidly. Continue to re-treat until late, hard frosts occur. October and November sprayings, using increased amounts of surfactant, have been very effective on alligatorweed.

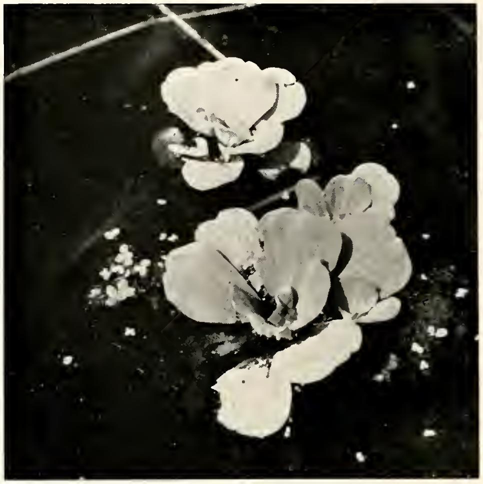
If alligatorweed, lotus, waterlily, or buttonbush and woody plants are the major problem, use silvex instead of the 2,4-D. Silvex is more effective on these plants and often reduces the number of re-treatments necessary.

CAUTION! Use great care to avoid getting spray solutions containing 2,4-D, silvex, or any of the other chemicals of the "phenoxy" group on adjacent crops or vegetation. Only small amounts are fatal to tomatoes, beans, cotton, and other broad leaf crops and vegetables. Use low nozzle pressures delivering a coarse spray. The heavy droplets reduce the hazard of spray drift. *Do not use spray equipment to treat crops or gardens before you have cleaned and decontaminated all sprayer parts.* We have found that this is difficult to do and it is suggested other, uncontaminated equipment be used for spraying other chemicals on susceptible plants.

A number of additional control techniques for using 2,4-D or silvex are currently being tested. One of these is based upon a recent technical paper presented by William E. Wunderlich of the U.S. Corps of Engineers. He has reported excellent control of alligatorweed by spraying the plants with a combination of 1 gallon of 2,4-D, 1 gallon of blackstrap molasses, and 100 gallons of water per acre. When injected underwater, milfoil and other plants were reported to be controlled. Our results are not yet in, but as such a treatment is very economical, it is offered here to permit those having an alligatorweed problem to use and evaluate the method. We would be most interested in the results you obtain.

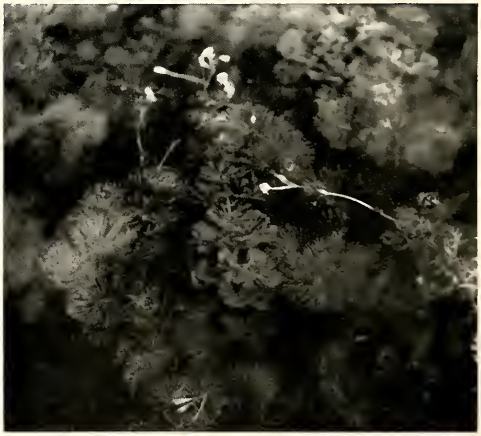
Waterlettuce and duckweed, although floating plants, are difficult to control. The most reliable control found to date is Chevron Chemical Company's "Ortho Diquat". If applied according to label directions, using Multifilm X-77 as the surfactant, it is highly effective on these difficult to kill plants. Diquat has also been used to control waterfern, watermeal, and other surface plants. It can also be used to control elodea, coontail, pondweeds, and other underwater plants if the water is free from silt and suspended organic matter. Diquat is inactivated upon contact with silt or organic debris.

A combination of potassium endothal and potassium silvex, marketed by Pennsalt Chemicals Corporation under their trade name of "Aquathol-Plus", has been widely advertised. Two gallons of this chemical, costing about



WATERLETTUCE *(Pistia stratioites)* and
DUCKWEED (Lemna, and other species)

The plant in the center is about 3 inches in diameter. Close inspection shows "daughter" plants arising from edges. Velvety light green leaves with strong ribs make identification easy. At least two species of duckweed appear also and watermeal appears as tiny white specks on the water surface. Use Diquat to control these plants.



FANWORT *(Cabomba caroliniana)*

The feathery, fan-shaped leaves and white flowers make this member of the waterlily family a very attractive plant for use in goldfish bowls. Do not release into ponds or streams! Water where picture was made was over 10 feet in depth. Fishing in such a mass of vegetation is almost impossible.

$26.00, has been found capable of removing most of the troublesome aquatic plants from a 1 acre pond. The material may be used "straight", but the writer prefers to add 1 pint of X-77 surfactant to each gallon of the herbicide before making the application. It is not necessary to spray this material and no agitation of the water is necessary. The herbicide is applied by pouring the entire amount of chemical into the water at one spot, usually in the shallow portions of the upper end where weed growth is often heaviest. By releasing the chemical in this manner, as far away from an outlet as possible, the loss of effect if the pond overflows after a heavy rain is greatly reduced.

A granular formulation of Aquathol-Plus is available. Where localized control is desired, or only shallow shoreline areas require treatment, the granules will be more effective than the liquid formulation. The granules should be evenly distributed over the surface of the area to be treated. There is very little "bleeding" of the herbicide into adjacent untreated areas. This property has been used to advantage in treating weed infested shorelines of large bodies of water. Twenty-five pounds of the granules per acre-foot of water has been sufficient to control most aquatic plants. It is almost impossible to harm fish if Aquathol-Plus is used as directed. Tests show that fish can survive in concentrations of more than 50 gallons per acre-foot. In farm ponds, satisfactory control has remained effective through several growing seasons. Spot treatment of seedlings and new plants, using the granules, will permit almost complete control.

No matter how reliable a chemical may be, none will control all types of plant growth unless the soil and water are made completely sterile. *Aquathol-Plus is not recommended for the control of waterlettuce, duckweed, waterfern, or algae.*

Aquathol, also manufactured by Pennsalt, is effective against a number of underwater species. It contains no silvex and is suggested if the water is to be used for irrigation.

Algae is apparently becoming an increasing problem judging by the number of requests being received for control methods. The control of algae is difficult because of the hazards involved. Almost all chemicals which effectively control algae are also highly toxic to fish. Copper sulphate, commonly known as "blue stone" has been used for many years. Treat only small portions of the pond at a time. Use only the crystal form, and even 2 pounds per acre-foot of these may be toxic to fish. Dissolve the crystals in water to make a saturated solution, then spread or spray the solution over the surface of the water being treated.

Dichlone, sold under the trade name of "Phygon-XL" by Naugatuck Chemical Division of United States Rubber, is effective on algae at very low rates. This material is very toxic to fish. *Follow the label directions with great care!*

Pennsalt Chemicals Corporation also has two algaecides which have given very good results in our tests. These are "Hydrothol 191" and "Hydrothol 47". Again, *follow label directions exactly*, both are toxic to fish at very low rates.

We are currently screening a number of chemicals in an effort to find an effective algaecide which will not harm the fish. Several of the materials under test show promise, but minimum rates have not yet been established. If you cannot control your algae with any of the named products, send a sample to the writer for identification. Possibly one of the new chemicals under test will have been found to be effective. We can then advise you on what to use for its control.

Some of the grasses, sedges, and other plants growing on marginal areas of the pond may not respond to the control methods mentioned. A good turf on the margins, dam, and spillway area is imperative to reduce erosion.

The "quality" or types of plants growing on this marginal area will very largely determine the pond's usefulness. This is particularly true of its recreational value. Tall grasses, briars, vines and brush quickly invade the moist areas around a pond. These not only make access to the pond difficult, but hinder sport fishing and almost eliminate swimming. Its value as a picnic area or play area can be ruined. Mowing is often recommended for the control of this undesirable plant growth, but in practice mowing is often very difficult or impractical to do on such moist sites. Fortunately, there is a very practical solution for this problem.

Bermudagrass is commonly found growing over most of our area and is an ideal plant for use on pond margins, dams and spillways. It readily furnishes a soft, dense turf which effectively controlls soil erosion. The soft resilient carpet covering the ground is pleasant to the feet of both swimmers and playing children. The short growth of this grass does not hinder the use of fishing tackle and mowing is almost unnecessary. Bermudagrass does not tolerate shading, therefore control of any over-topping plants must be maintained if this highly desirable grass is to remain dominant. Research by Commission personnel has now produced an economical and effective control measure.

SPATTERDOCK, "Cowlily" *(Nuphar advena)*

A common plant in Louisiana. It can completely cover a shallow pond. Use silvex or Aquathol-Plus for control. 2, 4-D sprays, if sufficient surfactant is used, are sometimes very effective.

One to two sprayings per year, at a cost of less than $10.00 per acre for each application, can now be recommended for maintaining bermudagrass turf. The following mixture has been tested over a three year period and has been found to be effective for controlling most unwanted plants yet is harmless to the bermudagrass. Monosodium Acid Methanearsonate (MSMA) such as Ansul Chemical Company's "Ansar 529" or "Ansar 170" has given slightly better results than Disodium Acid Methanearsonate (DSMA). DSMA is available from Vineland, Pennsalt, and many other companies. The writer prefers to use Ansar 529. The amounts given are sufficient to treat one acre of area. Mix ½ gallon Ansar 529, or if unavailable substitute 4 pounds DSMA, into 200 gallons of water. Add ½ pint Tordon 22-K or 1 quart Tordon 101 Mixture (Dow Chemical Company). Add 1 pint X-77. Mix the ingredients well and apply under low pressure as a coarse spray to avoid drift. Plants must be covered by a thin film of the solution. Add additional X-77 if droplets instead of a film is produced. *Do not spray onto trees or shrubs you wish to keep!* In our tests, sprayed plants other than bermudagrass have died, but no evidence of injury has been found on unsprayed vegetation.

If you should wish to kill all plants, a number of soil sterilants are available and can be supplied by your dealer. Grasses, sedges, and other similar plants can be controlled by the commercially available grass killers. Follow the label directions carefully! Dalapon, Amitrol-T, Banvel-D, MBC, and others, have been tested and found effective on a wide range of species.

The writer will furnish addresses of manufacturers or representatives if you cannot obtain any of the mentioned products from your local dealer. If you need additional information, I again repeat, "We are as close as your telephone or mailbox" and happy to assist you. ✠

The first to describe our fauna and write what may be considered a natural history of Louisiana was M. Le Page du Pratz, a Frenchman, who came to this country in 1718 and remained in Louisiana for many years. His published accounts of the country, the natives, and its fauna and flora are not only interesting but also amusing, especially the crude engravings which embellish his works.

WILDLIFE-O-GRAM

SPORTSMEN SPENT OVER $4 BILLION TO HUNT AND FISH IN 1965.

Sportsmen in 1965 spent more than $4 billion on hunting and fishing, John S. Gottschalk, Director of the Department of the Interior's Bureau of Sport Fisheries and Wildlife announced.

The Survey, similar to others conducted in 1955 and 1960, determined how many sport fishermen and hunters there were in 1965, how much they spent, what aspects of their favorite sports these expenditures covered, how far they traveled in pursuit of game and fish, participation by age and sex, and other information.

The Survey showed that fishermen members were up from the 1960 survey findings but that hunter numbers decreased. Gottschalk pointed out that the fisherman increase was largely due to increased interest in salt-water fishing.

Copies of the report, "The 1965 National Survey of Fishing and Hunting," are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402, at 75 cents each.

BOWHUNTERS AND LANDOWNERS

The Louisiana Wild Life and Fisheries Commission has been notified that the National Field Archery Association has a Sportsman-Landowner's Guarantee carried by each bow hunter who is a current member of the association.

The guarantee covers the property of a landowner up to $100, should a bowhunter refuse to pay for damages he has caused on his property.

The full guarantee is shown on the back of each member of the NFAA bowhunter's classification card.

CATFISH AND CRAWFISH PAMPHLETS

Two new wildlife educational pamphlets, "Catfish By The Acre" and "More About Crawfish", published by the Louisiana Wild Life and Fisheries Commission, are off the press and they're free for the asking. Just write to any of the district offices or the Commission, 400 Royal Street, New Orleans, Louisiana 70130.

ALL ROADS LEAD TO ARIZONA

Jim Tallon, Arizona Game and Fish Department, Phoenix, reports that quail are in such numbers that he is afraid some of the citizens will be stomped to death. He has asked for help from nonresident hunters in controlling the quail population. Jim has an attractive brochure which he gladly sends on request.

HUNTING THE WHITETAIL DEER

144 pages. Illustrated with black and white photographs. Published by Harper & Row, Publishers, 49 East 33rd Street, New York, New York; 1965. Price $3.95 in cloth, $1.50 in paper.

One of the Outdoor Life Skill Book series, HUNTING THE WHITETAIL DEER tells all about bagging one of North America's most widely distributed big game animals. The illustrated text covers whitetail wiles, firearms and bows, hunting equipment, hunting areas and techniques to be used, preventing buck fever, dealing with wounded deer, cleaning and cooking venison, hauling deer out of the woods, and trophy preservation. Packed with tips from front to back, this book should prove useful to beginning and not-so-experienced deer hunters.

The Bird of the month

Charles R. Shaw

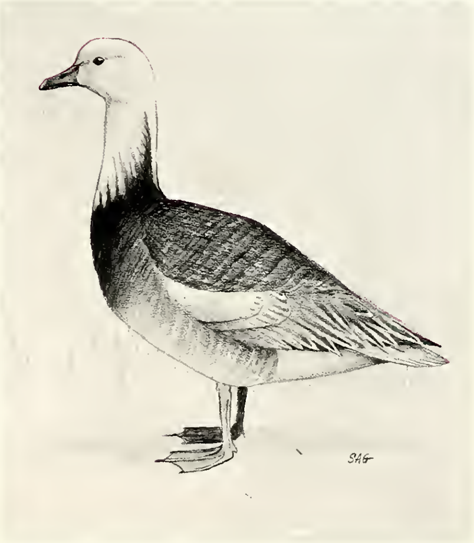
BLUE GOOSE

Chen Caerulescens

THE NAME OF THE Blue Goose is naturally descriptive although the actual coloration is more of a darkish grey-brown with greyish-blue wing coverts. The white head and neck of the adults, together with black "grinning" patch on the side of the pinkish bill serve quite well to distinguish this medium sized goose from all others which might be expected to occur in Louisiana. The common name of "eagle-head" of course refers to the white coloration although this is usually stained to a somewhat rusty appearance due to the feeding habits. There are many other colloquial names for this bird, including "blue brant" and "blue wavy".

In spite of the huge numbers migrating yearly up and down the country the Blue Goose is relatively unknown to most of the country since it seems to move directly to the Louisiana wintering grounds with very little deviation from the direct flight path. In contrast to the slow southward movement of its larger relative the Canada Goose, which pauses at many likely feeding areas, the Blue Goose comes down almost non-stop from the Artic tundra of the James Bay region to the vast marshes of southern Louisiana where it may congregate in huge flocks sometimes numbering several hundred thousand as winter progresses. It may commonly be seen in conjunction with its close relative the Lesser Snow Goose with whom it shares the distinctive "grinning" patch on the bill, a characteristic not found in our other geese. In fact some authorities claim that the "Blues" and "Snows" are actually only color phases of the same species and point out such things as mixed family groups, mixed flocks, hybridization, intermediate coloration, etc.

This is the most common of the four species of geese which are normally found in our state during the winter. The "Blues" and "Snows" far outnumber their larger relatives. The Canada Goose has become quite rare, most flocks stopping farther north where food and refuges beguile them into spending the winter. The White-fronted or Speckle-belly is actually more of a Central Flyway bird, although numbers of them regularly turn up in the southwestern part of the state and their numbers appear to be increasing. I have seen Blues, Snows, Canadas and White-fronts all in the same field at the Rucie Moore ranch in Cameron Parish. The conservation minded owner maintains what is virtually a sanctuary on this ranch which is located just north of the Sabine National Wildlife Refuge.



Great numbers of Blue Geese are maintained on state and federal refuges in southern Louisiana and the natural abundance and complexity of the marsh country of our southern coastline provides food and protection for huge numbers of these birds.

Amazingly, although these birds are present in vast numbers, the nesting grounds of the Blue Goose were not discovered until 1929 since it lies in the northern reaches of the Hudson Bay area. After an intensive search starting in 1923 and covering over 30,000 miles, a Canadian naturalist, J. Dewey Soper, finally located the nesting geese at Foxe Basin in western Baffin Island. The Next year George M. Sutton located a breeding colony on Southhampton Island in the northern reaches of Hudson Bay.

Although perhaps lacking in the prestige value of the famous Canada Goose, the Blue Goose makes up the bulk of the bag of the goose hunter in our state and many people from all over the nation come to make a goose hunt in the Louisiana marshlands.

In addition to providing sport for the waterfowl hunter, the Blue Goose is a great attraction for many tourists visiting Louisiana in the winter as the huge flocks of these birds provide a spectacular sight to be seen nowhere else.

RETURN REQUESTED
Louisiana Wild Life and Fisheries Commission
400 Royal Street
New Orleans, Louisiana 70130

Photo by Albert Tullier

LOUISIANA SHRIMP ARE HIGHLY IN DEMAND. THE DEMAND IS GREATER THAN THE SUPPLY

Pond Raised Shrimp

Looking to the future, Louisiana Wild Life and Fisheries Commission biologists have been experimenting with pond raised shrimp. Results to date are encouraging. Experimental ponds are located at the Grand Terre Marine Laboratory and at Rockefeller Wildlife Refuge in southwest Louisiana. This photograph shows some of the one-half acre ponds located on a tidal flat near the Grand Terre laboratory. Retaining walls are built around the levees to stop erosion due to tide and wave action.